

In the Claims:

Claims 1-53 were previously pending.

Claims 11, 12, 18, 22, 25, 29, 30, 32 and 47-50 are amended.

Claims 1-10, 13-17, 23, 24, 26-28, 37 and 41-46 are canceled without prejudice.

Claims 11, 12, 18-22, 25, 29-36, 38-40, 47-50 and 51-53 are pending.

Listing of Claims:

1-10. (Canceled).

11. (Currently amended) ~~A computer readable storage medium as recited in claim 10, the instructions being executable to perform additional acts comprising:~~

The method of claim 21, further comprising, before performing the requesting step, prompting a user to select one of the application programs to be closed; and

before performing the terminating step, prompting the user to select one of the application programs to be terminated.

12. (Currently amended) A computer-readable storage medium as recited in claim 10 22, the instructions being executable to perform additional acts comprising:

before performing the requesting step, requiring a user to select one of the application programs to be closed; and

before performing the terminating step, requiring the user to select one of the application programs to be terminated.

13-17. (Canceled)

18. (Currently amended) A method as recited in claim 17 20, wherein the reclaiming and discarding are performed at further memory usage thresholds that are set in relation to the second and third memory usage thresholds.

19. (Currently amended) A method as recited in claim 17 20, wherein the reclaiming and discarding are performed at further memory usage thresholds that are set in relation to the first, second, and third memory usage thresholds.

20. (Previously presented) A method of controlling memory usage in a computer system having limited physical memory, wherein one or more application programs execute in conjunction with an operating system, the method comprising:

at a first memory usage threshold, requesting at least one of the application programs to limit its use of memory;

at a second memory usage threshold that is more critical than the first memory usage threshold, requesting at least one of the application programs to close itself;

at a third memory usage threshold that is more critical than the first and second memory usage thresholds, terminating at least one of the application programs without allowing its further execution; and

reclaiming unused stack memory and discarding read-only memory before requesting at least one of the application programs to close itself and before terminating at least one of the application programs, further comprising:

before performing the requesting that at least one of the application programs close itself, prompting a user to select one of the application programs to be closed; and

before performing the terminating, prompting the user to select one of the application programs to be terminated.

21. (Previously presented) A method of controlling memory usage in a computer system having limited physical memory, wherein one or more application programs execute in conjunction with an operating system, the method comprising:

at a first memory usage threshold, requesting at least one of the application programs to limit its use of memory;

at a second memory usage threshold that is more critical than the first memory usage threshold, requesting at least one of the application programs to close itself;

at a third memory usage threshold that is more critical than the first and second memory usage thresholds, terminating at least one of the application programs without allowing its further execution; and

reclaiming unused stack memory and discarding read-only memory before requesting at least one of the application programs to close itself and before terminating at least one of the application programs;

before performing the requesting that at least one of the application programs close itself, requiring a user to select one of the application programs to be closed; and

before performing the terminating, requiring the user to select one of the application programs to be terminated.

22. (Currently amended) A computer-readable storage medium having computer-executable instructions for performing ~~the method recited in claim 17 acts for controlling memory usage in a computer system having limited physical memory, wherein one or more application programs execute in conjunction with an operating system, by performing acts of:~~

at a first memory usage threshold, requesting at least one of the application programs to limit its use of memory;

at a second memory usage threshold that is more critical than the first memory usage threshold, requesting at least one of the application programs to close itself;

at a third memory usage threshold that is more critical than the first and second memory usage thresholds, terminating at least one of the application programs without allowing its further execution; and

reclaiming unused stack memory and discarding read-only memory before requesting at least one of the application programs to close itself and before terminating at least one of the application programs, further comprising:

before performing the requesting that at least one of the application programs close itself, prompting a user to select one of the application programs to be closed; and

before performing the terminating, prompting the user to select one of the application programs to be terminated.

23, 24. (Canceled)

25. (Currently amended) A computer system as recited in claim 23, wherein the act of yielding increasing control comprises the following act:

at the third memory threshold, prompting a the user to select at least one of the application programs and then the operating system requesting that the at least one selected application program close itself.

26-28. (Canceled)

29. (Currently amended) A computer system as recited in claim 23 31, wherein the operating system is further configured to perform the following additional act:

at one or more of the memory thresholds, reclaiming unused stack memory.

30. (Currently amended) A computer system as recited in claim 23 31, wherein the operating system is further configured to perform the following additional act:

at one or more of the memory thresholds, discarding read-only memory.

31. (Previously presented) A computer system comprising:
a processor;
an operating system that is executable by the processor and that utilizes a physical memory;
a virtual memory system that includes physical memory but does not include secondary storage;
one or more application programs that utilize the virtual memory system;
wherein the operating system is configured to perform the following acts:
monitoring physical memory usage; and
at increasingly critical physical memory usage thresholds, wielding increasing control over said one or more application programs to reduce physical memory usage, wherein the act of wielding increasing control comprises the following acts:

at a first memory threshold, requesting at least one of the application programs to limit its use of memory;

at a second memory threshold, prompting a user to select at least one of the application programs and then requesting that the at least one selected application program close itself;

at a third memory threshold, prompting the user to select at least one of the application programs and then terminating it without allowing its further execution; and

before prompting the user at the second memory threshold, reclaiming unused stack memory and discarding read-only memory.

32. (Currently amended) A method of controlling memory usage in a computer system having limited physical memory, wherein one or more application programs execute in conjunction with an operating system, the method as recited in claim 20, further comprising:

monitoring memory usage; and

~~when memory usage is high~~ at the first memory threshold, sending a message from the operating system to at least one of the application programs requesting the application program to reduce its current use of memory.

33. (Previously presented) A method as recited in claim 32, further comprising sending the message to the application program when memory usage reaches a defined threshold.

34. (Previously presented) A method as recited in claim 32, wherein the application programs have respective message loops, the method further comprising sending the message to the application program through its message loop.

35. (Previously presented) A method as recited in claim 32, wherein the application programs have respective message loops, the method further comprising sending the message to a particular application program that was least recently active.

36. (Previously presented) A computer-readable storage medium having computer-executable instructions for performing the method recited in claim 32.

37. (Canceled)

38. (Currently amended) A computer-readable storage medium as recited in claim 37 22, wherein the application programs have respective message loops, the instructions being executable to perform a further act of sending the message to the application program through its message loop.

39. (Currently amended) A computer-readable storage medium as recited in claim 37 22, wherein the application programs have respective message loops, the instructions being executable to perform a further act of sending the message to a particular application program that was least recently active.

40. (Currently amended) [[An]] A computer-readable storage medium as recited in claim 22 wherein at least one application program that resides in a computer readable memory for execution by a processor in conjunction with an operating system, the application program having includes a message loop that

receives messages from an operating system, the application program being responsive to a particular message received through its message loop to reduce its current use of memory.

41-46. (Cancelled)

47. (Currently amended) The computer-readable storage medium of claim [[41]] 22, further comprising instructions configured to cause a the processor to reclaim unused stack memory at one or more of the memory thresholds.

48. (Currently amended) The computer-readable storage medium of claim [[41]] 22, further comprising instructions configured to cause a the processor to discard read-only memory at one or more of the memory thresholds.

49. (Currently amended) ~~A computer readable storage medium having computer executable instructions for performing a process for controlling memory usage in a computer system having limited physical memory, wherein one or more application programs execute in conjunction with an operating system, the process comprising:~~

~~at a first memory usage threshold, requesting at least one of the application programs to limit its use of memory;~~

~~at a second memory usage threshold that is more critical than the first memory usage threshold, requesting at least one of the application programs to close itself;~~

~~at a third memory usage threshold that is more critical than the first and second memory usage thresholds, terminating at least one of the application programs without allowing its further execution, and, before performing the terminating, prompting the user to select a currently executing application program to be terminated; and~~

The computer-readable storage medium of claim 22, further comprising instructions configured to cause a processor to perform acts of reclaiming unused stack memory and discarding read-only memory before requesting at least one of the application programs to close itself and before terminating at least one of the application programs.

50. (Currently amended) ~~A computer readable storage medium having computer executable instructions for performing a process for controlling memory usage in a computer system having limited physical memory, wherein one or more application programs execute in conjunction with an operating system, the process comprising:~~

~~monitoring memory usage; and~~

~~when memory usage is high,~~

The computer-readable storage medium of claim 22, further comprising instructions configured to cause a processor to perform acts of sending a message from the operating system to at least one of the application programs including a particular application program that was least recently active, requesting the application program to reduce its current use of memory.

51. (Previously presented) An article of manufacture comprising a computer-readable medium including computer-executable instructions thereon that are configured, when executed electronically, to cause a computer system to perform acts of:

controlling memory usage in a computer system having limited physical memory, wherein one or more application programs execute in conjunction with an operating system by requesting, at a first memory usage threshold, at least one of the application programs to limit its use of memory;

requesting, at a second memory usage threshold that is more critical than the first memory usage threshold, at least one of the application programs to close itself;

terminating, at a third memory usage threshold that is more critical than the first and second memory usage thresholds, at least one of the application programs without allowing its further execution;

reclaiming unused stack memory and discarding read-only memory before requesting at least one of the application programs to close itself and before terminating at least one of the application programs;

prompting a user to select one of the application programs to be closed before performing the requesting that at least one of the application programs close itself; and

prompting the user to select one of the application programs to be terminated, before performing the terminating.

52. (Previously presented) An article of manufacture comprising a computer-readable medium including computer-executable instructions thereon that are configured, when executed electronically, to cause a computer system to perform acts of:

- first determining that a first memory threshold has been achieved;
- requesting at least one of the application programs to limit its use of memory responsive to first determining;
- second determining that a second memory usage threshold that is more critical than the first memory usage threshold has been achieved;
- requesting at least one of the application programs to close itself responsive to second determining;
- third determining that a third memory usage threshold that is more critical than the first and second memory usage thresholds has been achieved;
- terminating at least one of the application programs without allowing its further execution responsive to third determining;
- reclaiming unused stack memory and discarding read-only memory before requesting at least one of the application programs to close itself and before terminating at least one of the application programs;
- requiring a user to select one of the application programs to be closed before requesting that at least one of the application programs close itself; and
- requiring the user to select one of the application programs to be terminated before terminating.

53. (Previously presented) An article of manufacture comprising a computer-readable medium including computer-executable instructions thereon that are configured, when executed electronically, to cause a computer system to perform acts of:

executing one or more application programs that utilize a virtual memory system that includes physical memory but does not include secondary storage;

executing an operating system that utilizes the physical memory, wherein the operating system is configured to perform acts of:

monitoring physical memory usage; and

wielding increasing control over said one or more application programs at increasingly critical physical memory usage thresholds to reduce physical memory usage, wherein wielding comprises acts of:

requesting at least one of the application programs to limit its use of memory at a first memory threshold;

prompting a user to select at least one of the application programs and then requesting that the at least one selected application program close itself at a second memory threshold;

prompting the user to select at least one of the application programs and then terminating it without allowing its further execution at a third memory threshold; and

before prompting the user at the second memory threshold, reclaiming unused stack memory and discarding read-only memory.